INTERNATIONAL®

INTERNATIONAL 144T CULTIVATOR

SETTING UP INSTRUCTIONS

S/N-U003203

1984

OPERATOR'S MANUAL

To The Owner

Your new International Harvester cultivator is designed to meet today's exacting operating requirements. The ease of operation, and ability to adjust to field conditions lighten your work and shorten your hours on the job.

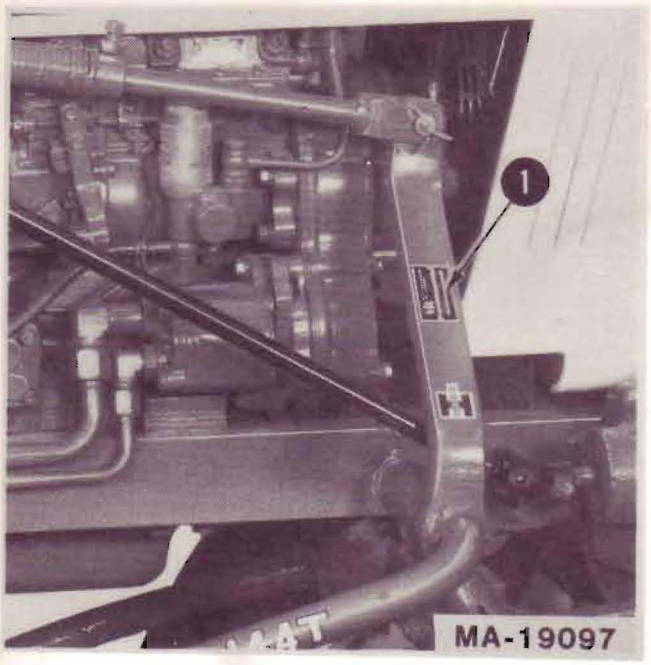
You are urged to consult your local International Harvester dealer concerning unusual conditions or special applications. Let the experience of your dealer and the organization associated with him serve you.

Be sure to read the instructions for Adjusting and Operating in this manual. Check each item referred to and acquaint yourself with the adjustments required to obtain efficient operation and maximum trouble-free service. Remember, a cultivator which is properly lubricated and adjusted saves time, labor, and fuel.

After the operating season, thoroughly clean your culivator and inspect it. Preventive maintenance pays dividends. Your dealer has original-equipment parts which assure proper fit and best performance. He is able to recondition your equipment to a like-new condition.

When in need of parts for the cultivator basic unit, always specify the serial number including any prefix or suffix letters. The serial number of the cultivator is located on the lift arm on right side. Write this serial number in the space provided below.

A standard of metric measurement known as International System of Units (SI) has been adopted for world-wide use. English Units followed by Metric Equivalents are used throughout this manual. (Metric Equivalents are given in parenthesis.)



1 – Cultivator serial number _____

TECHNICAL PUBLICATIONS AVAILABLE

Your International Harvester Dealer and his factory trained servicemen are best qualified to service your equipment. Up-to-date instructions and adequate special tools are also a part of your Dealer's service facilities.

This Operator's Manual was prepared to instruct you in proper operation and maintenance of your equipment. If you desire additional information you may purchase Service Manuals and/or Parts Catalogs. Additional copies of the Operator's Manual are also available.

Fill out the order blank and forward together with your check or money order in the appropriate amount (U.S. Funds) to:

International Harvester Company

PRINTING AND
DISTRIBUTION SERVICES

807 Blackhawk Drive

Westmont, Illinois 60559

Attention: Cashier

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Parts Catalog			
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CAUTION
Read the Operator's Manual.
Learn to operate this machine SAFELY.
Be alert. Observe ALL Safety Practices.
Machines can be hazardous in the hands of an UNFAMILIAR, UNTRAINED or COMPLACENT operator.
Don't risk INJURY or DEATH.
MA-10034

INTRODUCTION

Cultivator on tractor 616 tool equipment and optional rear section shown

The International 144T Cultivator is a one-row cultivator designed for use on the International 274 Tractor with hydraulic lift system. Cotton, corn, potatoes, and other crops may be cultivated when planted in rows spaced from 40" to 58" (1016 to 1473 mm) apart. The operator has a clear, unobstructed view of the row due to the offset of the tractor seat. Small crops are followed accurately and where conditions permit, cultivating speeds up to 4-1/2 (7.2 km/h) miles per hour can be maintained.

All adjustments for depth and lifting at the ends of the field are accomplished from the driver's seat by means of the hydraulic lift system control levers. The three-point hitch position control lever controls the rear section and the auxiliary hydraulic control lever raises or lowers the front section. Instant and positive depth control enables the driver to cultivate hard and soft spots in the field to a uniform depth.

The universal mounting frame consists of two parallel-action gang assemblies mounted one on each side at the front of the tractor. Each assembly includes a frame, push pipe with pressure spring, parallel-acting gangs, and a tool bar attaching bracket. The attaching bracket is provided with a keyhole slot to facilitate attaching and detaching the ground working tools without disturbing their adjustment.

The cultivator gangs are easily and quickly attached or detached without disturbing any of the set adjustments when the tractor is to be used for some other purpose. This assures the cultivator working at the same depth and in the same relation to the row when it is reattached as it did when last used.

The ground working tools have 1-1/4" round standards. The standard clamps are the single wedge-bolt type which are easily and quickly adjusted. The clamp is designed so that a single wedge bolt secures the vertical adjustment of the standard and, at the same time the position of the clamp along the tool bar. Tool bar extensions are provided for the sweep running next to the row and these have ample adjustment so the sweep may be set closer to or farther from the row, as desired.

The cultivator is available with 16 Style Spring Trip tooling equipment.

The following attachments are available to meet the requirements imposed by the various crop and soil conditions.

Disk Hillers – for throwing dirt to the row or for barring off.

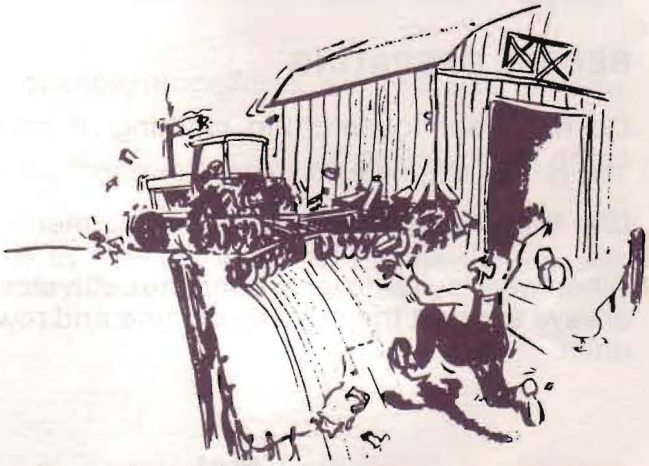
122 Shields – prevents dirt from covering the crops.

Rear Section – to remove tire tracks.

Front section tool equipments having the 16 Style Spring Trips are available as follows:

The 416 Front Section Tool Equipment includes tool bars, standard clamps, four spring trip standards, two 8" (203 mm) full sweeps, and two 10" (254 mm) half-sweeps.

The 616 Front Section Tool Equipment includes tool bars, standard clamps, six spring trip standards, four 8" (203 mm) full sweeps, and two 10" (254 mm) half-sweeps.



CAUTION! Whenever dismounting from a vehicle stop all power sources, lower equipment to the ground, shut off engine, use park brake or lock, and remove key.

MA-16856

WORK SAFELY — FOLLOW THESE RULES

Instructions given with this symbol are for personal safety. Be sure you and your workers follow them.

A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT

Misuse or modification of this machine can cause:

- mechanical breakdown
- property damage,
- injury or death.

Always use proper safety precautions. Tell your workers how to work safely.

BEFORE OPERATING

Do not wear loose-fitting clothing; it may catch in moving parts.

Use extreme care when making adjustments.

When working under or around the cultivator, always support the cultivator frame and row units.

CAUTION! Before handling ANY equipment, READ the OPERATOR'S MANUAL.

MA-16875

After servicing, be sure all tools, parts, or servicing equipment are removed from the machine.

Make sure that there is no one near the machine before starting it.

Use only metric tools on metric fasteners.

DURING OPERATION

No one other than the operator should ride on the tractor.

Do not attempt to remove any obstructions from while the cultivator is in motion.

Keep hands, feet, clothing and objects away from moving parts.

Do not ride on the cultivator during operation.

Use extreme care when operating close to ditches, fences, or on hillsides.

ON-HIGHWAY OPERATION

Comply with your state and local laws governing highway safety, and with regulations when moving machinery on a highway.

Drive at a reasonable speed to maintain complete control of the machine at all times.

The S.M.V. reflector emblem should be used at all times on public roads. Also turn on the tractor flashing yellow lights.

ENERGY CONSERVATION
FOLLOW THESE RECOMMENDATIONS

An Energy Conservation Plan is your best insurance against waste. Energy is Money. Don't Waste It!!

An Energy Conservation Plan consists of:

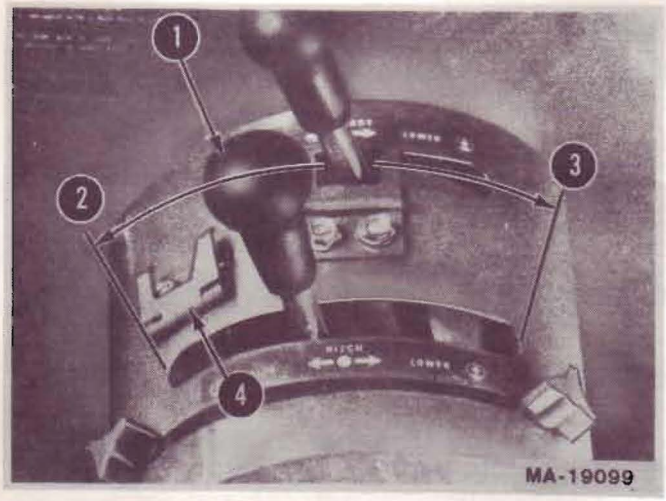
1. Being sure the equipment is properly adjusted to the task being performed. Review Operators Manual thoroughly.
2. Being sure the operator is thoroughly trained in the operation of the equipment. Review Operators Manual thoroughly.
3. Being sure that proper lubrication and maintenance procedures are followed. Review Operators Manual thoroughly.
4. Matching as closely as possible the tractor size (horsepower) to the implement size and soil conditions.

The following additional recommendations are made by Product and Test Engineers to assist you in operating your equipment at maximum efficiency. To do so will allow you to get the most out of your dollars spent on energy.

1 – Keep sweeps sharpened.
2 – Operate up to 4-1/2 M.P.H.

ADJUSTING AND OPERATING

THREE POINT HITCH POSITION CONTROL LEVER



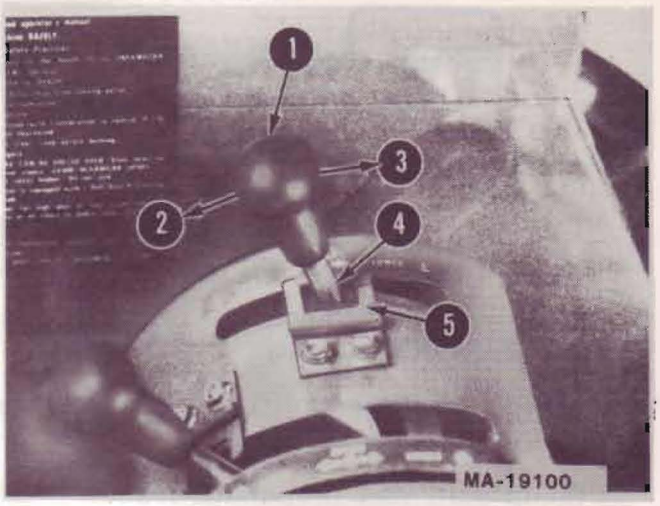
1 – Three point hitch position control lever
2 – Maximum raised position
3 – Maximum lowered position
4 – Lever lock latch

The lever is used to raise or lower the equipment mounted to the three point hitch.

CAUTION! When transporting the tractor on the road with the equipment mounted on the three point hitch, always lock the control lever with the latch at the highest position.

CAUTION! Never park equipment in the raised position. Moving the control lever will lower the equipment even though the engine is not running. If it is necessary to service the equipment in the raised position, use jackstands to safely block the equipment in place.

AUXILIARY HYDRAULIC CONTROL LEVER



1 - Auxiliary hydraulic control lever
2 - Raise position
3 - Lower position
4 - Neutral latch
5 - Lever lock latch

The double acting auxiliary control valve is provided on the three point hitch position control valve and operated by the lever.

The auxiliary control valve actuates the auxiliary hydraulic cylinder and raises or lowers the mid-mounted cultivator.

An adjustable stop collar on the cylinder rod will automatically stop the cylinder at a pre-set depth.

When the lever is moved to the rear, the auxiliary hydraulic cylinder retracts to raise the cultivator.

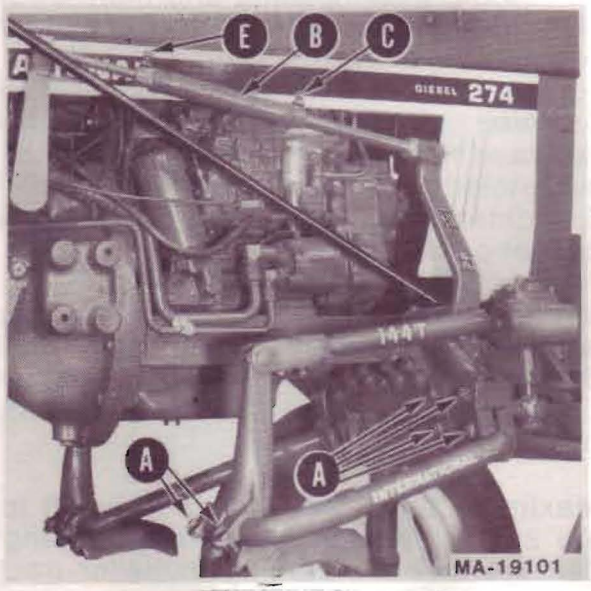
GENERAL

Extra weight on the tractor wheels is recommended for cultivating hillside fields and to better stabilize the tractor. For this purpose, liquid in the tires (such as calcium chloride solution) or wheel weights (available on special order) may be used.

NOTE: Before operating the cultivator, be sure all bolts and set screws are perfectly tight, and all cotters are spread to keep them from falling out.

GANG BEAM TAKE-UP BOLTS

The gang beam bearings and the tool bar clamps on the front section are provided with split bearings with take-up bolts "A". These bolts are provided to remove any side play in the gangs. Keep them drawn up as the bearings wear but not so tight as to cause the gangs to bind.



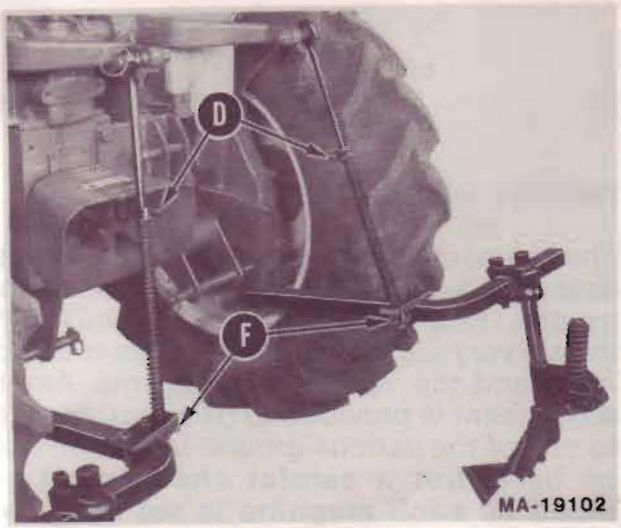
CAUTION! No riders.

MA-16868 A

PRESSURE SPRINGS

For ordinary working conditions, the pressure springs "B" should be set so a slight pressure is exerted on the gangs. In hard ground, it may be necessary to increase the spring pressure.

Front Section: To increase the pressure on the gangs, raise the cultivator, loosen set screw "C", stretch the spring to give the desired tension, and tighten the set screw securely.



Rear Section: To increase the pressure on the gangs, raise the cultivator, loosen set screw "D", compress the spring to give the desired tension, and tighten the set screw securely. Be sure that set collars "F" are also secure. For normal working conditions, collar "F" works best if set next to cotter pin.

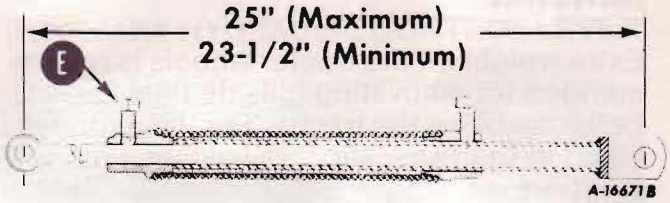
NOTE: If the gangs do not penetrate properly after making these adjustments, check the settings of the shovels.

CAUTION! Read Operator's Manual before disassembly of a loaded spring.

MA-16850

HEIGHT OF LIFT

The height of lift for the front section will necessarily be limited by the under side of the tractor. The amount of space provided for lifting will vary with the different styles of equipment and the various attachments. Ample adjustment is provided to give maximum lift to any of the various ground tools that may be used, but **a careful check must be made as each machine is set up or remounted to see that it does not strike the tractor when raised.**



The height of lift may be controlled by the length at which the lift rods are set or by the auxiliary hydraulic control lever stop. Whichever method is used to determine the height of lift, **be sure the machine does not strike the tractor when raised.**

Lift Rod Adjustment

1. Loosen the set screw "E" on both rods.

2. Push the auxiliary hydraulic control lever to the extreme forward position.

3. Raise the right gang until the lift arm strikes the gear housing and then lower it slightly and tighten the set screw "E" in this position.

4. Raise the left gang until it is level with the right and tighten the set screw "E".

5. Tighten the jam nuts so the set screws cannot come loose.

Minimum Lift Rod Setting: If the lift rods are set shorter than the minimum length, damage to the mounting frame may occur if the gangs are lowered to the lowest possible position.

Maximum Lift Rod Setting: If the lift rods are set longer than the maximum length, damage to the mounting frame or tractor may occur if the gangs are raised as high as possible.

GROUND TOOLS

Standard Adjustment

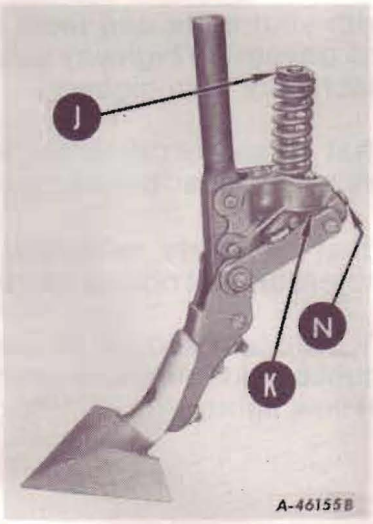
It is important to operate the cultivator with the standards adjusted to a vertical position, and the shovels or sweeps pointing directly forward. When this is done, more accurate spacing of the tools is obtained, and the standard shanks will function properly when an obstruction is encountered in the field. The shanks are all adjustable to give the proper pitch to the sweeps or shovels.

Spring Trips

Spring trips are adjusted at the factory to trip properly and will work until all ordinary conditions. Adjustment should not be changed unless absolutely necessary.

Spring trips may be made to trip harder by tightening the spring nut "J". To do this, simply grasp the spring and turn it by hand, which in turn will usually turn the nut unless the nut has become rusty during use.

A wood packing block will be found between the adjusting bar and the spring bracket at "K" on the 16 Spring Trip. Make certain these wood blocks are removed before using the cultivator.



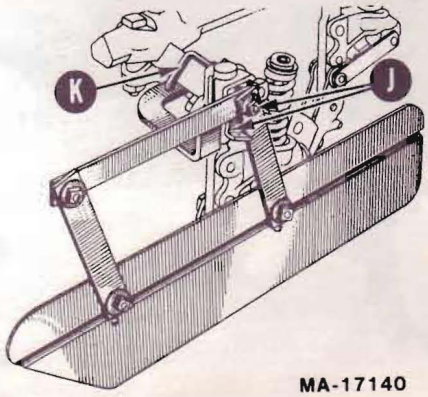
16 Spring Trip.

The pitch of the sweeps (or shovels) may be changed on the 16 Spring Trips by turning the adjusting bolt indicated at "N".

SHIELD

The height of the shield above the row is controlled by adjusting the clip "J". To adjust the shield, loosen the rear bolt in the shield support, set the shield as desired, bring the clip to bear against the pivot link, and tighten the bolt securely.

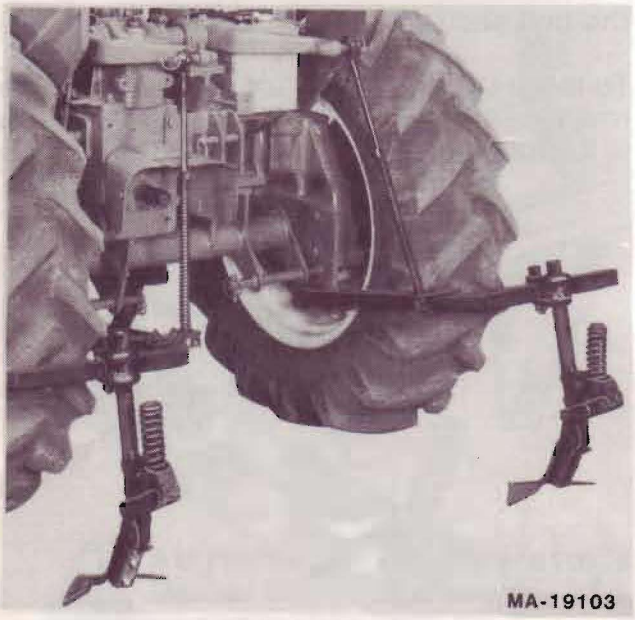
To move the shield toward or away from the row, loosen the U-bolt "K" holding the shield to the tool bar extension and adjust as desired.



ADJUSTABLE REAR GANG BEAMS

The gang beams for the rear sections may be set so the sweeps run directly behind the tractor rear wheels for wheel treads ranging from 40" to 58" (1016 to 1473 mm).

Do not pull other implements with the rear sections attached.

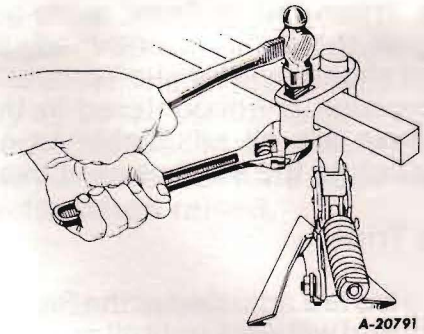


WEDGE BOLT CLAMPS

It is important that the wedge bolt clamps be tightened securely so that the spring trip does not come loose. This is easily done by using a hammer and wrench as shown.

To Tighten the Clamps: Drive the wedge bolt in place with a hammer. Tighten the nut with a wrench and, at the same time strike the head of the wedge bolt with the hammer. Continue to do this until the wedge bolt is tight.

To Loosen the Clamps: Back off the nut until it is near the end of the wedge bolt, and strike the end of the wedge bolt with a hammer. Use care not to strike the corners of the nut or the threads may become damaged.



ROAD TRANSPORT PREPARATION

Be sure that the cultivator is in the fully raised position before transporting.

Drive at a reasonable speed to maintain complete control of the machine at all times.

Comply with your state and local laws and regulations governing highway safety when moving machinery on a highway.

Be sure that all safety reflectors, and SMV emblem are wiped clean before transporting.

Be sure that all safety reflectors and the S.M.V. emblem are not obscured from traffic.

The S.M.V. emblem should be used at all times on public roads. Also turn on the tractor flashing yellow lights.

STORAGE

Inspect the machine for any worn or broken parts and replace.

Lubricate the machine completely following the instructions under "Lubrication".

Shelter the machine in a dry place.

Clean the machine of all dirt, trash, etc. If left on, it will hold moisture and thus cause serious damage from rust.

Repaint any bare or rusted spots.

SETTING UP

STEP 1. GENERAL

Remove all wires and arrange the parts conveniently.

Lubricate all moving parts and see that they work freely.

Bolts and pins must be used in the holes in which they are found, or in the parts to which they are attached, unless otherwise shown.

NOTE: The cultivator is designed for use on International® 274 Tractor having rear wheels equipped with maximum tire size of 12.4–24 tires.

Whenever the terms "left" and "right" are used, it should be understood to mean from a position behind and facing the tractor.

During assembly, tighten the bolts to the number of foot-pounds or (Newton Meters) as indicated in the table unless otherwise specified.

Use only metric tools on metric fasteners.

ENGLISH BOLT TORQUE IN FOOT POUNDS AND NEWTON METERS

Bolt Dia. Inches	Type 1		Type 5		Type 8	
	Ft. lbs.	(N-m)	Ft. lbs.	(N-m)	Ft. lbs.	(N-m)
1/4	6	(8)	10	(14)	13	(18)
5/16	13	(18)	20	(27)	29	(39)
3/8	23	(31)	35	(47)	48	(65)
7/16	37	(50)	57	(77)	80	(108)
1/2	55	(75)	85	(115)	123	(167)
5/8	104	(141)	170	(230)	235	(319)
3/4	185	(251)	305	(414)	425	(567)
7/8	315	(427)	445	(603)	690	(936)
1	445	(603)	670	(908)	1050	(1424)

NOTE: For plated bolts use 85% of chart figures.

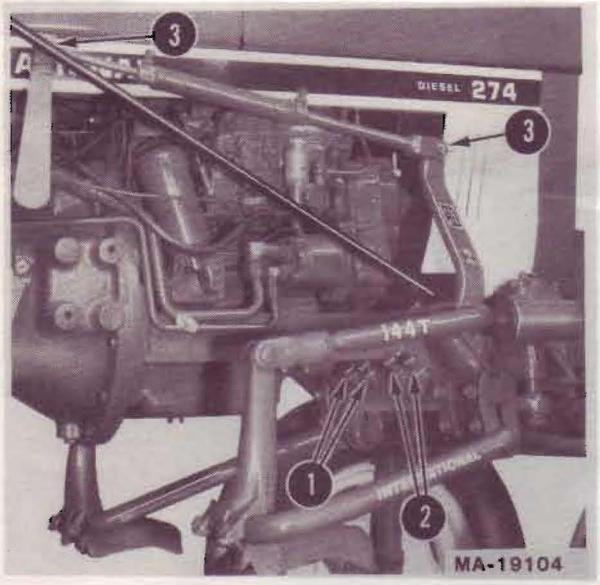
U-BOLT TORQUE

Use type 1 torque of comparable size bolts.

METRIC BOLT TORQUE IN NEWTON-METERS

Nominal Thread Diameter (mm)	Class 5.8		Class 8.8		Class 9.8	
	Min.	Max.	Min.	Max.	Min.	Max.
M6	7	8	11	13	13	14
M7	12	13	19	21	21	24
M8	17	19	27	31	30	34
M10	34	38	54	61	60	68
M12	59	66	94	106	105	118
M14	94	106	150	169	168	189
M16	146	164	233	263	261	293
M18	202	227	323	363	—	—
M20	285	321	456	513	—	—
M22	389	437	622	699	—	—
M24	493	554	788	886	—	—

STEP 2. UNIVERSAL MOUNTING FRAME

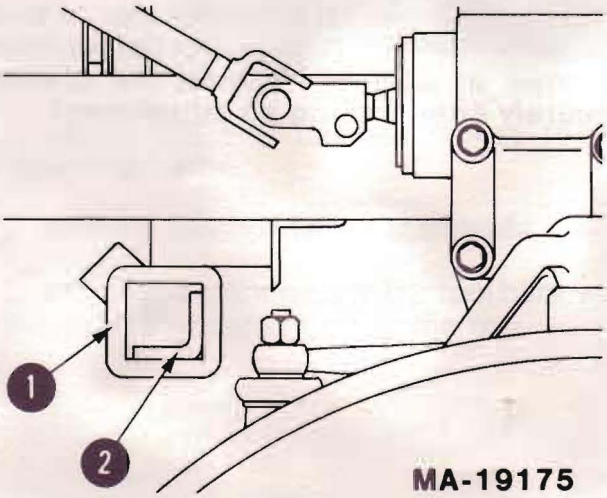


Right side of tractor.

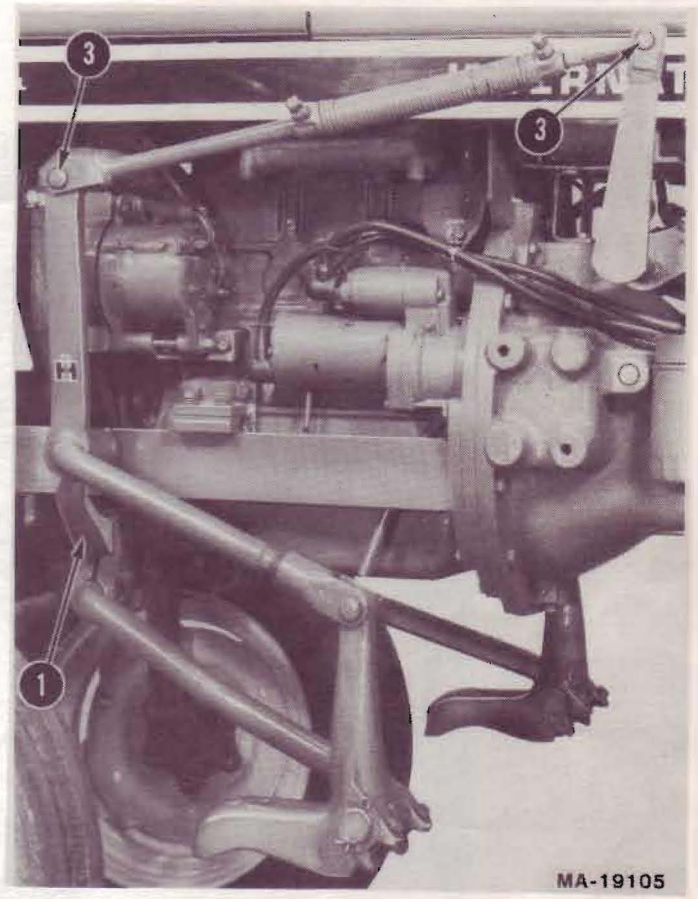
1. Slide the left frame bar into the square housing base and tighten the hex. head bolts.

2. Slide the right frame bar into the square housing base and tighten the hex. head bolts.

NOTE: International 274 Tractors with serial numbers 8329 and below may require a shim, part No. 1 264 077 C1, to remove looseness between the square housing and the cultivator frame bars. Order from service parts.



1 - Square housing
2 - Shim



3. Attach the lift rods to the lift arms and to the auxiliary hydraulic arms as shown.

NOTE: See "HEIGHT OF LIFT" in the Adjusting and Operating Instructions before attempting to operate the machine.

STEP 3. FOUR-SWEEP FRONT SECTION

416 Tool Equipment

1. Attach the tool bar assemblies to the mounting frame.

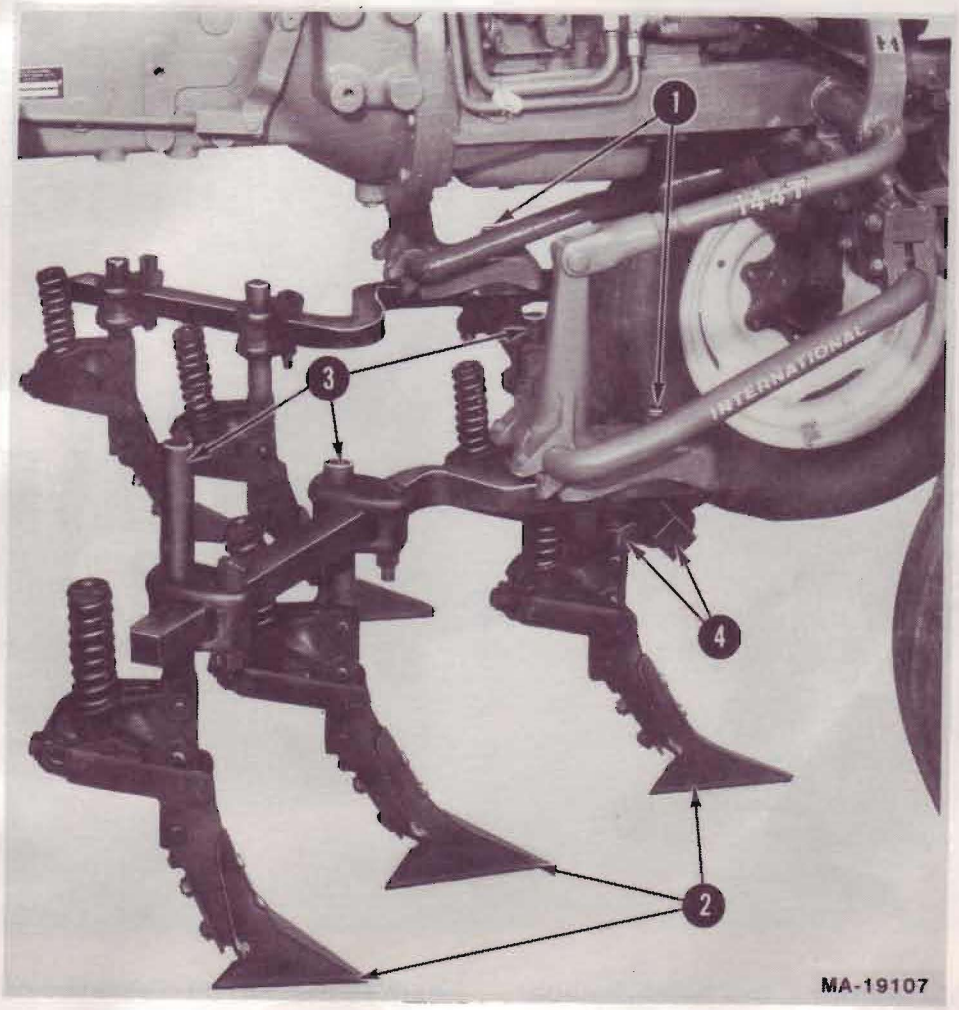
2. Bolt the sweeps to the standards, with the half sweeps on the short standards.

3. Attach the standards to the tool bars, with the long standards in the rear and the short standards, with the half sweep, next to the row.

4. Loosen the tool bar extension clamps and adjust the standards closer to or farther from the row, as desired. **Tighten the clamp securely after making an adjustment.**

STEP 3. SIX-SWEEP FRONT SECTION

616 Tool Equipment



1. Attach the tool bar assemblies to the mounting frame.

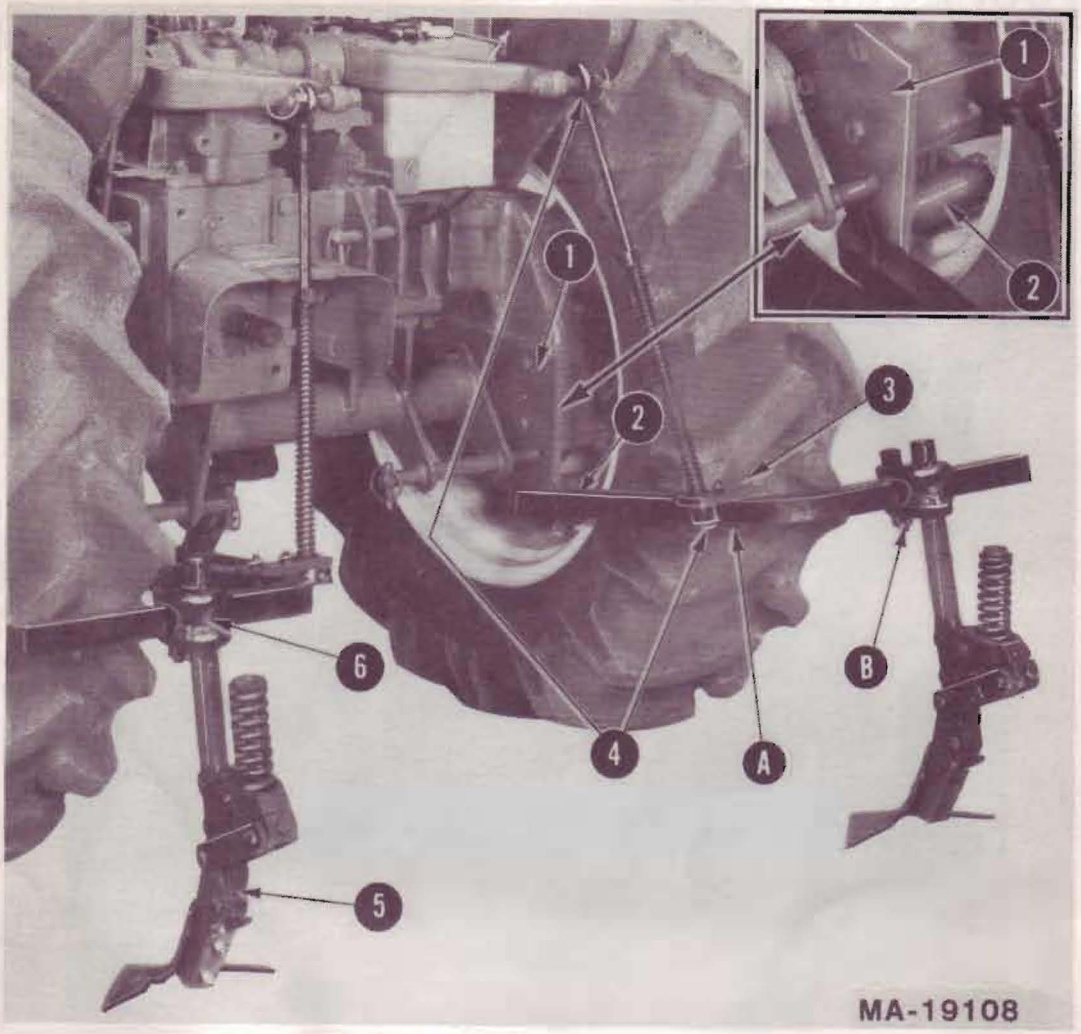
2. Bolt the sweeps to the standards.

3. Attach the standards to the tool bars, with the short standards next to the row.

4. Loosen the tool bar extension clamps and adjust the standards closer to or farther from the row, as desired. **Tighten the clamp securely after making an adjustment.**

OPTIONAL EQUIPMENT

REAR SECTION



NOTE: For rear sections, the fixed drawbar must be removed. If the tractor has a three-point hitch, the stabilizer and lower links must be removed before attaching the rear section gangs.

1. Attach the bearing mounting bracket to the rear attaching pad on the rear axle housing.

2. Insert the gang beams into the mounting bracket. Secure with washer (1.28 x 2.0 x 054 ga.) and klik pin.

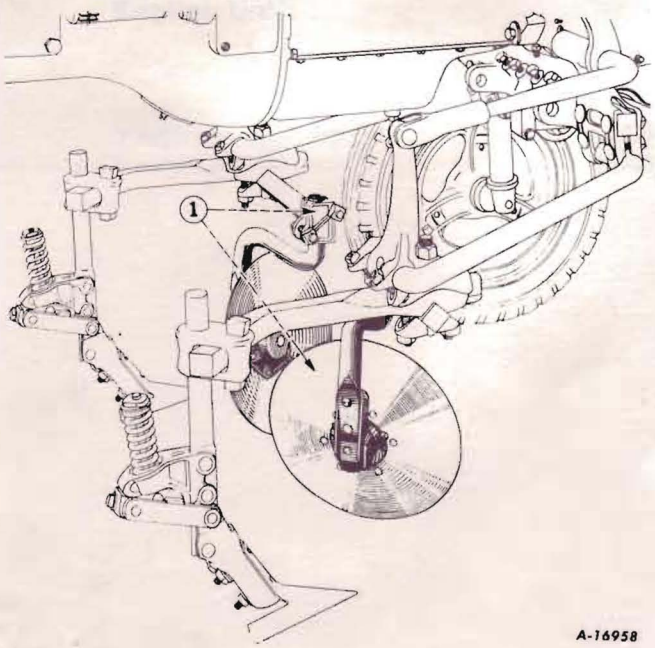
3. Bolt the lift rod bracket to the gang beam with U-bolt and nuts. **NOTE:** Position the brackets "A" close to the bend of the gang beam so that lift rod clears the power take-off shield. **Also, make sure that at full lift, the clamps "B" do not strike the tire.**

4. Attach the pressure rod with spring to the lift rod bracket and secure with set collar and cotter pin. Attach the other end of the lift rod to the tractor rockshaft arm and secure with the klik pin. Refer to "Pressure Springs" in "ADJUSTING AND OPERATING" section.

5. Bolt the sweeps to the standards.

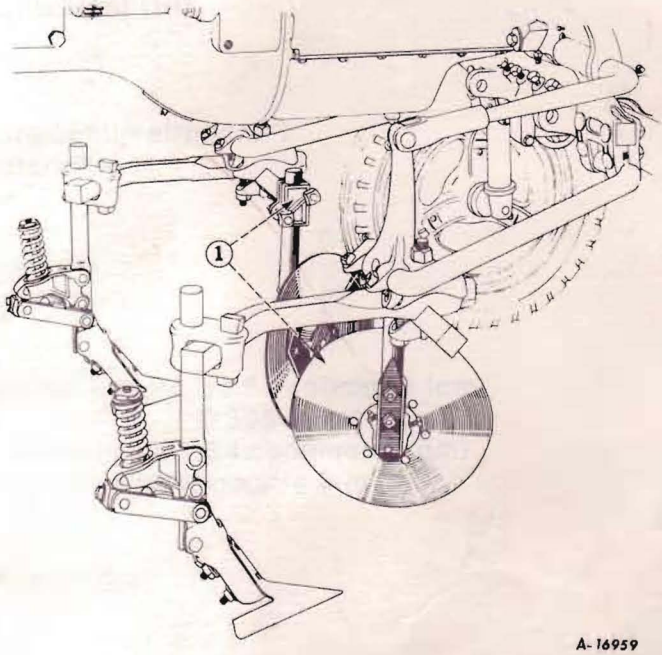
6. Raise the gangs and attach the standards to the gangs with the wedge-bolt clamps.

21 DISK HILLER



1. Remove the standards next to the row and clamp the disk hillers in place as shown.

22 DISK HILLER

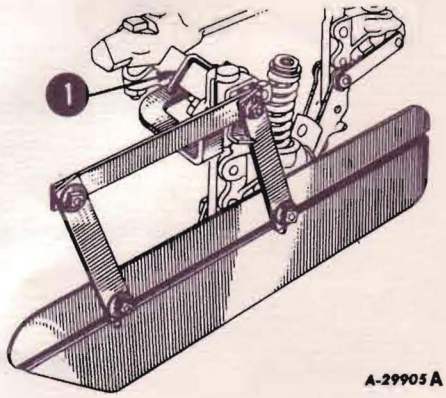


1. Remove the standards next to the row and clamp the disk hillers in place as shown.

122 SHIELD

Spring Trip Tool Equipment

1. Attach the shield to the tool bar extension as shown, and adjust it in relation to the row as desired.



MEMORANDA

MEASUREMENT UNITS

English Unit	Metric Equivalent (SI)
Area	
1 square inch (in^2)	6.45 square centimetre (cm^2)
1 acre	0.405 hectare(ha)
Force	
1 pound-force (lbf)	4.45 newton (N)
Length	
1 foot (ft)	304.8 millimetre (mm), 30.5 centimetre (cm), 0.305 metre (m)
1 inch (in)	25.4 millimetre (mm), 2.54 centimetre (cm)
1 mile	1609 metre (m), 1.61 kilometre (km)
Mass	
1 pound (lb)	0.454 kilogram (kg)
Power	
1 horsepower (hp)	0.746 kilowatt (kW)
Pressure	
1 pound-force per square inch, psi (lbf/in^2)	6.89 kilopascal (kPa), 0.00689 megapascal (MPa)
Temperature	
t degree Fahrenheit (°F)	$\frac{(t - 32)}{1.8}$ degree Celsius (°C)
Torque	
1 pound-force foot (lbf·ft)	1.356 newton metre (N·m)
Velocity	
1 mile per hour (mph)	1.61 kilometre per hour (km/h)
Volume	
1 US bushel	0.035 cubic metre (m^3)
1 US gallon (US gal)	3.79 litre (L)
1 US quart (US qt)	0.946 litre (L)

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